HF Big West Wilmington imposition of MHF excerpts from my Presentation slides 6 18 08

12 Wilmington Ultramar/Valero refinery SCAMD self-deception on WCS

- June 20, 2002 Public meeting on Draft SEIR
- Sept 2002 SCAQMD adopted EJ initiatives including re-initiate Rule 1410 phase-out of use of HF in refineries -- OR achieve same results by MOU. [All HF gone by 2008]
- Feb 2003 MOU approves MHF
- Final EIR L.A. County Notice of Determination Dec 17, 2004 under CEQA
- 2004 ? EIR Ch 6 Project Alternatives: Sulfuric rejected as infeasible by refinery
- Sept 13 2004 Wilmington Quest analysis of WCS: only 7.9% reduction in distance with ReVAP MHF: "significant"
- Dec 2004 SCAQMD Att 1 Findings Doc – significant and unmitigated hazard impacts remain, but "only in industrial area around refinery", will have RMP and PSM programs

[(not true – see WCS, p 5-2: "with exception of alky unit release"]

- Valero missed Dec 2005, then May 9 2007deadline, paid $1 million in penalties

13

- **WORST-CASE CONSEQUENCE ANALYSIS FOR ULTRAMAR'S WILMINGTON REFINERY ALKYLATION IMPROVEMENT PROJECT**
- **Prepared By**
- **Quest Consultants Inc.**
- **908 26th Avenue N.W.**
- **Norman, Oklahoma 73069**
- **Telephone: 405-329-7475**
- **September 13, 2004**

14

Maximum Hazard Distance to
20 ppm for 60 minutes - Table 4-2

Release from Settler Acid Outlet
Existing HF 25,240 ft (5 miles)
Modified HF 23,250 ft = 7.9% reduction

O From Reactor Outlet:

- Existing HF 24,790 ft
- Modified HF 19,990 ft = 20% reduction

15

H2S Plume Map and VZ - Ultramar

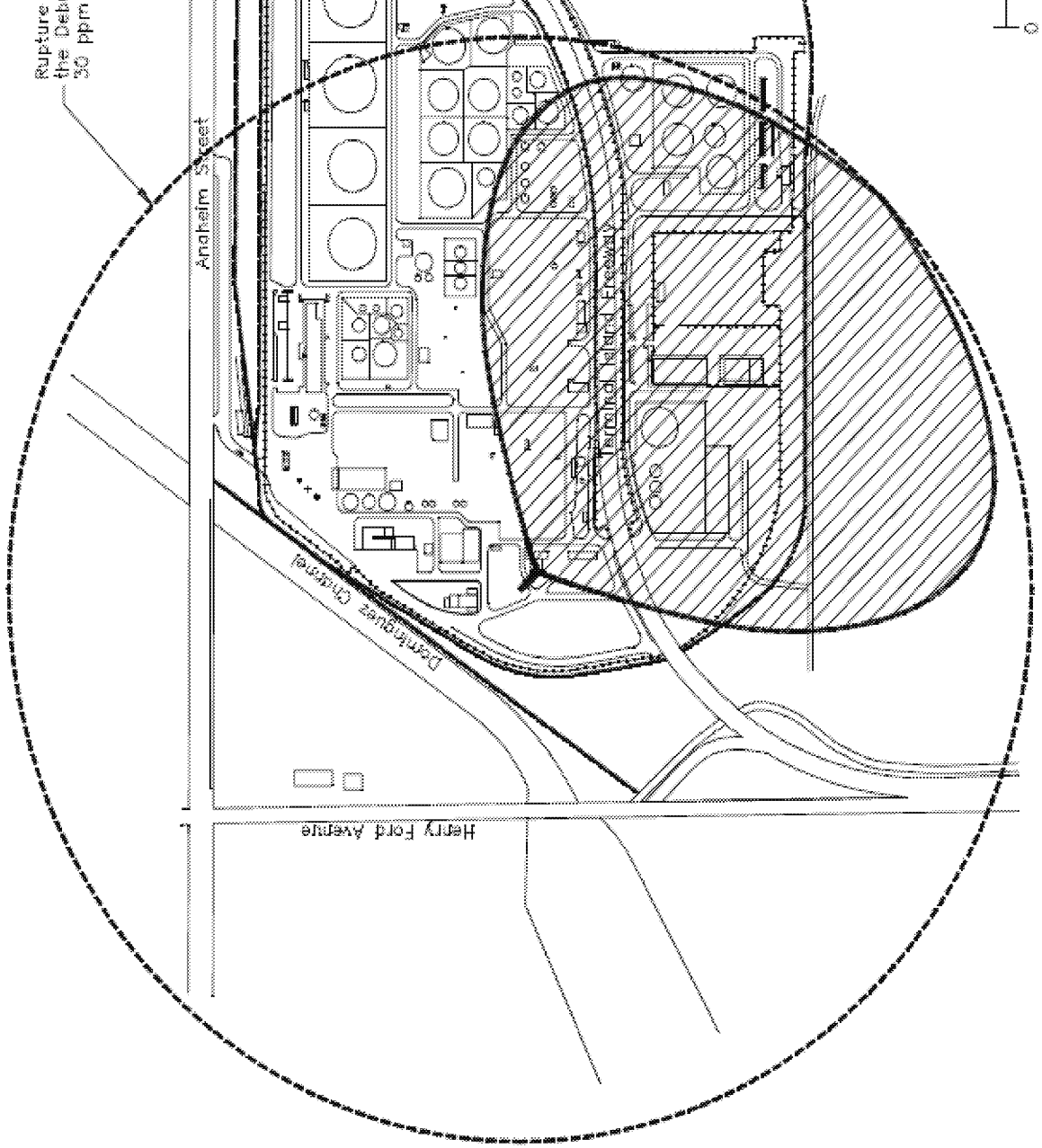

Figure 4-1
Worst-Case Consequence Analysis Hazard Footprint - NHT (H_2S Toxicity)

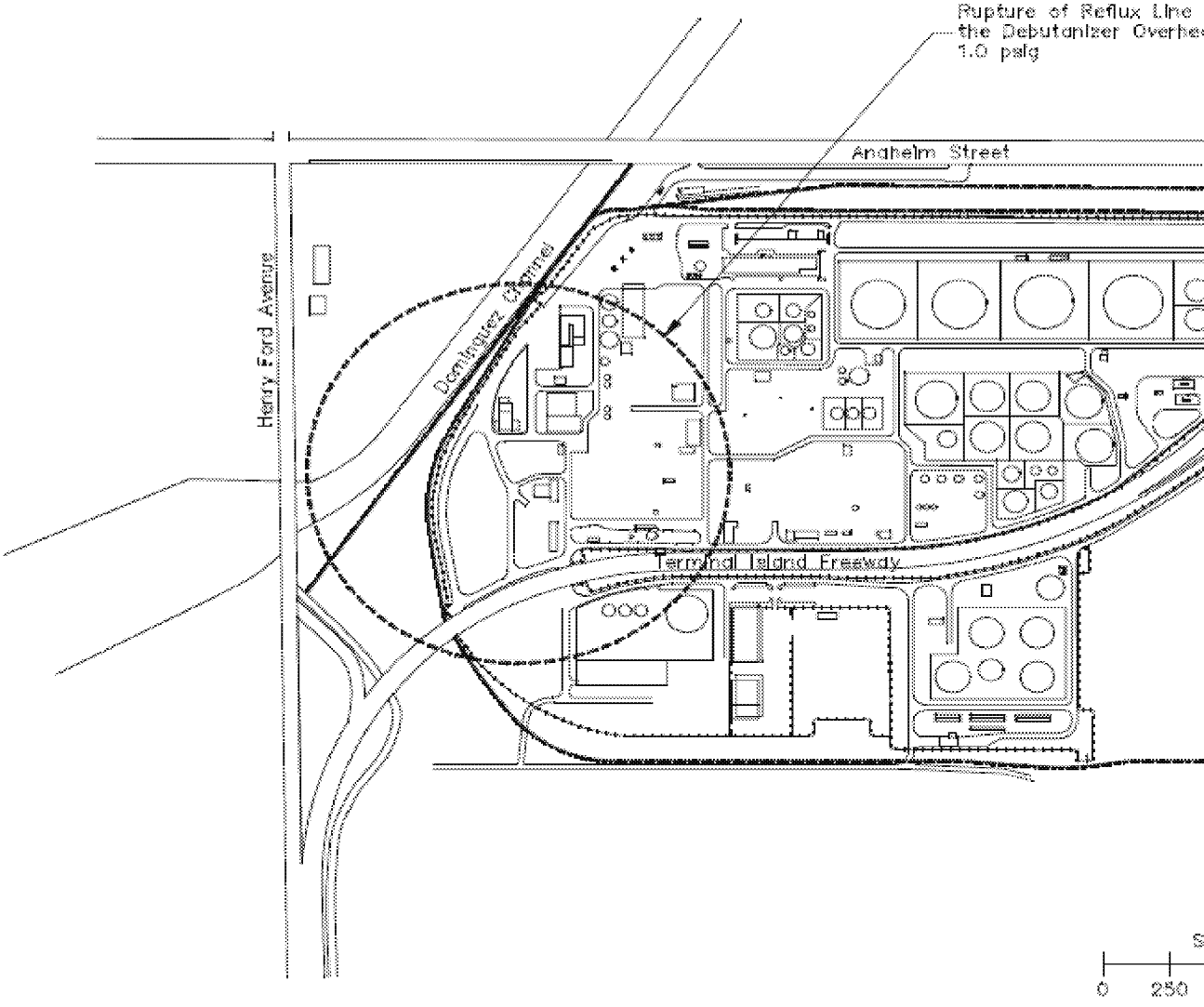

Figure 4-3
Worst-Case Consequence Analysis Hazard Footprint - NHT (Explosion Overpressure)

18

SECTION 5
CONCLUSIONS

- "The primary conclusion that can be drawn from the worst-case consequence modeling results is that for the new process unit, the proposed modifications to existing process units and the additions to storage do not result in significantly larger potential hazard zones than those posed by the existing Ultramar Refinery configuration.

- The modifications to the Alkylation Unit (ALKY) produce a significant reduction in the potential worst-case impact following a release of
hydrofluoric acid bearing fluids.

The implementation of the ReVAP process, with its use of the acid additive which reduces the volatility of the acid phase, results in an 7.9% reduction in the maximum hazard distance."

- Pp 5-1, 5-2

19

- "None of the modified or new units creates a **NEW** hazard that could extend into residential areas. With the exception of the Alkylation Unit, all off-site hazards are confined to industrial areas surrounding the facility.

- The potential impacts from the Alkylation Unit are significantly reduced with the use of the ReVAP process. Although there is still the potential for a release to extend off-site into residential areas, the area potentially exposed will be reduced with the project modifications.

- It should be kept in mind that for the worst-case scenario to occur, the following conditions must be met.
  (1) A full rupture of the line occurs.
  (2) The release does not ignite within minutes of the rupture.
  (3) The wind speed is low (less than 3 mph).
  (4) The atmosphere is calm.

- This sequence of events is highly unlikely and only results in an off-site hazard (toxic or flammable vapor dispersion) for a limited number of potential releases."

20

HF Struggles in Torrance

- Mobil Oil/Torrance refinery fires, explosions
- City of Torrance sued Mobil as nuisance
- Mistrustful Fire Dept demanded hard-wired HF sensors, alarms
- 1991 Rule 1410 might drive Mobil out of L.A.
- Torrance court settlement at first required "no aerosol" with MHF
- Later Stipulation allowed "comparative" QRA
- SCAQMD finally acquiesced in MHF for 2 refineries

- 1990 Torrance consent decree: Mobil could use MHF only if Mobil convinced Safety Advisor that MHF "would not form an aerosol or dense vapor cloud upon release". Apparently this legal requirement could not be met, so led to:
- 1994 Stipulation/Order: Mobil could use risk-based study to show that "MHF (including mitigation) presents no greater risk that a [comparable] sulfuric acid plant …"
- Allows "a way of more objectively assessing the risks to the off-site public and on-site personnel." [SA-iv]

21

Torrance case: "An Ideal Use of QRA"

"Alternative Alkylation Technologies in a Refinery: A Case Study in Risk-Based Decision Making"
http://www.rmpcorp.com/LinkedFiles/AlternativeAlkylationTechnologiesInARefinery.htm
Kaiser and Maher, 2004

- Mobil did many studies
- Oil industry did many also: data and modeling
- Safety Advisor EQE (Kaiser and Maher) reviewed. Result:
- If 4% sulfuric estimated to remain airborne at nearest fenceline/public road: "possibly bubbles to mist"
- If Mobil operates with MHF that can reduce by 65% [not 100%] the airborne HF concentrations
- Then MHF risks at nearest fenceline/public road are judged "comparable" to sulfuric, so Mobil can adopt MHF

- Mobil's QRA showed MHF risks "very small compared with.. traffic fatality… drowning and…[fatal] falls".
- Fire Chief did "peer review", approved report.
- City Council and Court accepted recommendations. [no hard-wired notification required – SA IV-29]

22

Safety Advisor (Maher and Kaiser, EQE) approves Mobil's QRA

- May 1995, 154-pp reviews and calculations to ascertain validity, completeness of the QRA data
- Also evaluated notification, Fire Fighting Capabilities and Emergency Response Program.
- Evaluated Mobil's MHF project "by comparison with other available technologies", said that it met legal criteria in Consent Decrees
- Mobil did MHF "experiments" [but no full-scale field test] and complex modeling
- "The work is scientifically defensible and has made it possible to perform credible analyses of MHF phenomenology and to perform a meaningful QRA."

23

Key aspects of the SA's approval of Mobil's analyses and claims

- "A robust QRA", but unprecedented, both technically and legally: [II-1]
- SA met with Mobil, industry and Fire Dept
- Comparative risks only: MHF and sulfuric
- No plume maps? [maybe some appendix]
- Use of fenceline/public road as end point
- Neither Mobil or industry did full-scale field tests on MHF or sulfuric – SLAB and DEGADIS modeling only [II-1, IV-39]
- Huge emphasis on low probabilities SA IV 13-31]. SA showed a few flaws, "optimistic" assumptions.
- Accepts Mobil's numerous assumptions and probability estimates [IV-14], many based on "judgments and experience" [IV-21] or "Absolute Probability Judgment" [IV-24] of Torrance refinery officials. So lots of room for bias:
- E.g., Mobil's MHF QRA takes credit for "several types of active mitigation systems" and "more rapid response time from personnel", but sulfuric QRA "takes credit for only operator action in isolating the release" [IV-19-21]

24

SA decisions on Mobil's analyses

- SA did see early PERF sulfuric study [Ref. 25] p V-15: SA focused on the 2-3% <u>not</u> deposited, wrestled it up to 4-7% estimated.

- Did "not explicitly model impacts of fires and explosions" – IV-62 – [no knock-on impacts]
- As part of ER program, SA to evaluate spray and water capabilities.
- Mobil will train plant ops and ER workers IV-69 to handle HF with care

25

Players (need helpful graphics)

- Mobil
- Oil industry
- Consultants
- Safety Advisor EQE (Maher and Kaiser)

- Fire Chief Scott Adams
- Court
- Citizens
- Media

26

"Don't alarm the Public"

- Houston Fire Chief
- DC sewage plant – Mgr and LEPC chief
- Chemical Week cover story 1992 – Section 112 r VZs "greatest public relations challenge to the chemical industry in this decade"
- Responsible CAER -- $10 million/year, from PR shop
- DC after 9/11: "don't scare the public to death"